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to their present condition of domestication. In the opinion of the present writer, who is now in Peru and who has lately been in Bolivia as well, this argument is of slight, if any, value. From close study of the matter it becomes clear that the llama is only partially domesticated. There are several criteria of domestication: If an animal depends upon a man for its food, if it breeds while in captivity, if it needs to be artificially sheltered from the stress of weather, if it is obedient to the wishes of its owner, it may be said to be domesticated. It is quite certain that by far the greater part of the llama species to-day feed themselves, refuse to breed in captivity (or, at any rate, generally breed when as far as possible from man), and do without shelter. It is true that the llama is more or less obedient to its owner, but it is a docile animal by nature, and, so long as it is not overloaded, it is a ready worker in its own way. Since this is so, it is quite clear that the llama is only partially domesticated, or rather, that it has been partially subjected to the uses of man, and it is certain that its status does not imply any long period of human influence.

PHILIP AINSWORTH MEANS

LIMA, PERU,
November 29, 1917

THE ORIGIN OF THE CUSTOM OF TEA
DRINKING IN CHINA

TO THE EDITOR OF SCIENCE: I have been much interested in a statement which occurs in the late Professor King's book "Farmers of Forty Centuries" relative to the origin of the custom of tea drinking in the Orient. Professor King states (p. 77):

In a sampan managed by a woman and her daughter, who took us ashore, the middle section of the boat was furnished in the manner of a tiny sitting-room, and on the sideboard sat the complete embodiment of our fireless cookers, keeping boiled water hot for making tea. This device and the custom are here centuries old and throughout these countries boiled water, as tea, is the universal drink, adopted no doubt as a preventive measure against typhoid fever and allied diseases.

And (p. 323):

The cultivation of tea in China and Japan is another of the great industries of these nations, taking rank with that of sericulture, if not above it, in the important part it plays in the welfare of the people. There is little reason to doubt that the industry has its foundation in the need of something to render boiled water palatable for drinking purposes. The drinking of boiled water has been universally adopted in these countries as an individually available, thoroughly efficient and safe guard against that class of deadly disease germs which it has been almost impossible to exclude from the drinking water of any densely peopled country.

These statements would indicate the following sequence of events: (1) the pollution of the drinking water, (2) disease arising from this pollution, (3) boiling of the drinking water to prevent disease, (4) addition of tea leaves to mask the insipid taste of the boiled water. While I have no doubt but that the first two items occurred in the order given, I have very grave doubts as to the sequence of the third and fourth items. It is extremely improbable that it was recognized centuries ago that typhoid fever, etc., were disseminated by pollution of the water supply, especially inasmuch as there was no knowledge of microorganisms or of the rôle which they play in disease until the work of Pasteur (1857-1863). Undoubtedly disease with the Chinese, as with every other people, was early regarded as the act of demons or a visitation of the gods.

To my mind, cause and effect were somewhat as follows: (1) The drinking water was undoubtedly polluted and typhoid, cholera, dysentery, etc., were endemic. (2) Certain families or clans found that a pleasing beverage could be made by steeping the leaves of the tea plant in hot water with the result that they drank very little if any of the polluted waters without previously boiling it. (3) Their neighbors or neighboring communities observed that these families or clans who drank tea had relatively little disease as compared with the non-tea drinkers and as a result the custom of tea drinking spread

throughout the land not because of the belief that boiled water prevented disease and tea leaves modified the insipid taste of the boiled water, but because the infusion of the tea leaves *per se* was looked upon as a medicine specific for the prevention of the prevalent diseases.

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SCIENTIFIC BOOKS

Applied Psychology. By H. L. HOLLINGWORTH and A. T. POFFENBERGER. D. Appleton and Co., New York, 1917. Pp. xiii + 337.

This book will properly attract many readers who wish to know the significance of the practical movement in psychology. As the first text-book in applied psychology it gives a well-balanced presentation of the aims, methods and scope of this new "type of interest and pursuit." Nowhere else have the results and methods of approach for practical problems been so completely assembled and so well guarded from misuse. Although it does not reach the dignity of a treatise on applied psychology, this admirable book by two members of the department of psychology at Columbia University will be appreciated both by general readers and by those psychologists who wish to vitalize their introductory courses by associating them with student interests. Only a few colleges as yet have offered a course which attempts to cover the broad field of applied psychology, but within a year a professorship in applied psychology has been established, the *Journal of Applied Psychology* started, and a Division of Applied Psychology under that title organized in an institute of technology. Whether a unit of instruction entitled applied psychology touches too varied interests and affords too meager content will doubtless continue for some time to be a question for each college to decide. It is certainly too early to expect a text to take the place of a teacher.

Besides bringing the results of many scattered researches together, the authors have helped to organize this branch of psychology

by carefully distinguishing and illustrating three main forms of application to practical problems. These three forms include psychological analysis of a situation, carrying over of principles worked out in allied researches, and the adaptation and improvement of technique. With this scientific procedure in the foreground, they have avoided the unpleasant effect on the student of either a very limited technical monograph or of the magazine literature of the prophetic promoter. The first portion of the book summarizes in compact and usable form the psychological work which helps to understand general human efficiency and how to increase it. It includes the influences of heredity, sex and maturity, environmental factors like illumination and ventilation, the principles derived from the studies of the learning process, the effects of work and rest, stimulants, etc. The second half of the book sets forth the psychological procedure in those fields of occupational activity in which the applications have been most explicit. These include employment management, the industrial workshop, advertising and salesmanship, law, social work, medicine and education.

The task of guarding the foundations of the new division of their science has not been assumed lightly by the authors. Instead of the usual illustrations from individual cases, which may or may not be exceptions, we find the constant citation of experiments bearing upon a problem with a careful discussion of the sources of error and the dangers of generalization from the particular investigation. Instead of mere psychologizing about work methods we now have much emphasis on the technique under which the conclusions were reached. The teacher of the consulting psychologist must evidently train him in technical methods of research and the interpretation of results. The authors look forward to that day when the engineering type of psychotechnical expert will meet with other specialists to co-operatively attack their joint problems, instead of the make-shift procedure under which the specialist in business, medicine, education, etc., attempts to dabble in psychology or the psychologist to dabble in other specialties.